

Analysis of Problems Using Aircraft Evacuations Slides

Gerard van Es

National Aerospace Laboratory NLR

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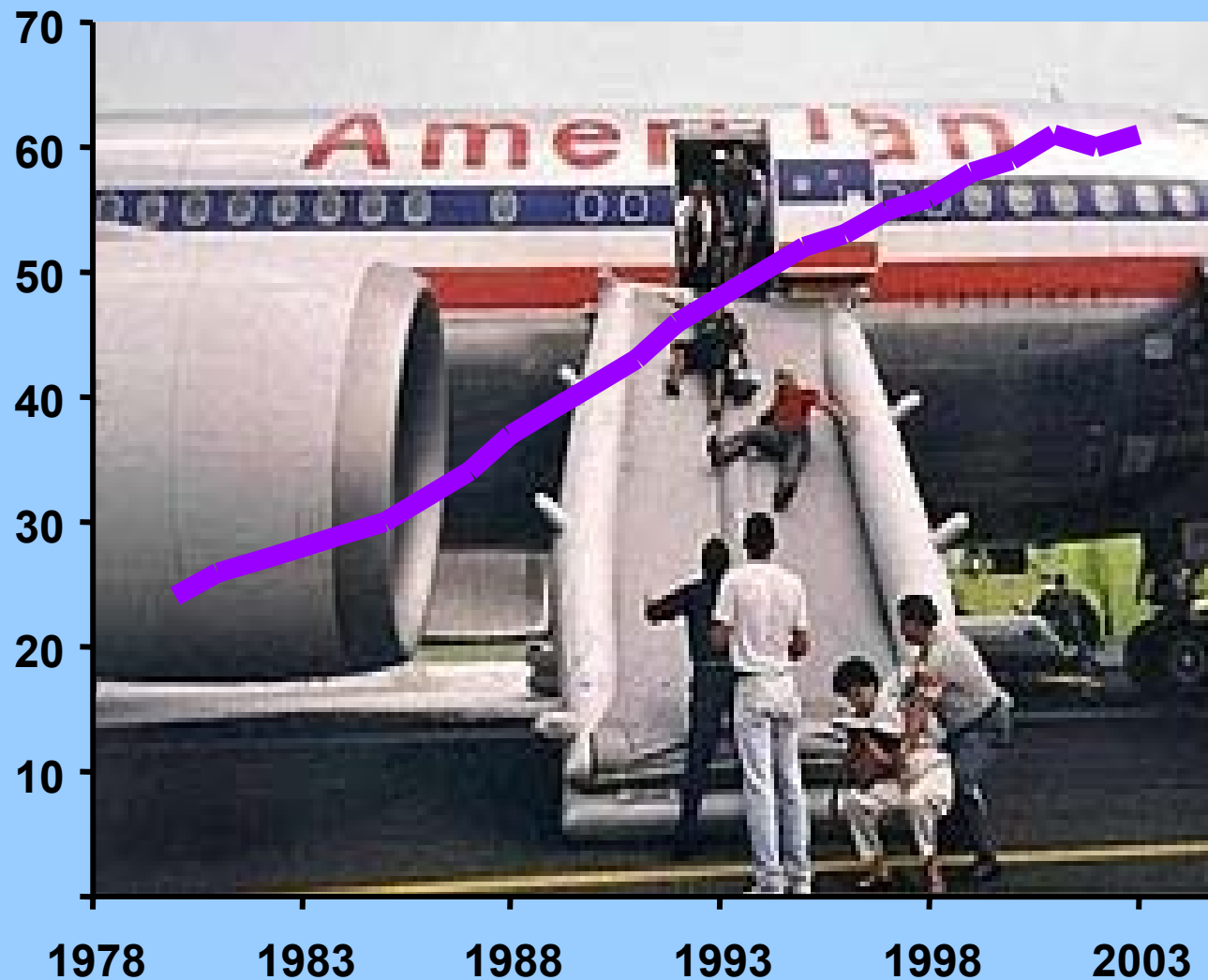
Study objective

**Provide insight into the problems
with evacuation slides**





Evacuations involving slides





Study approach

- **Literature survey**
 - **Analysis of historical:**
 - emergency evacuations
 - precautionary evacuations
- in which slides were used.**



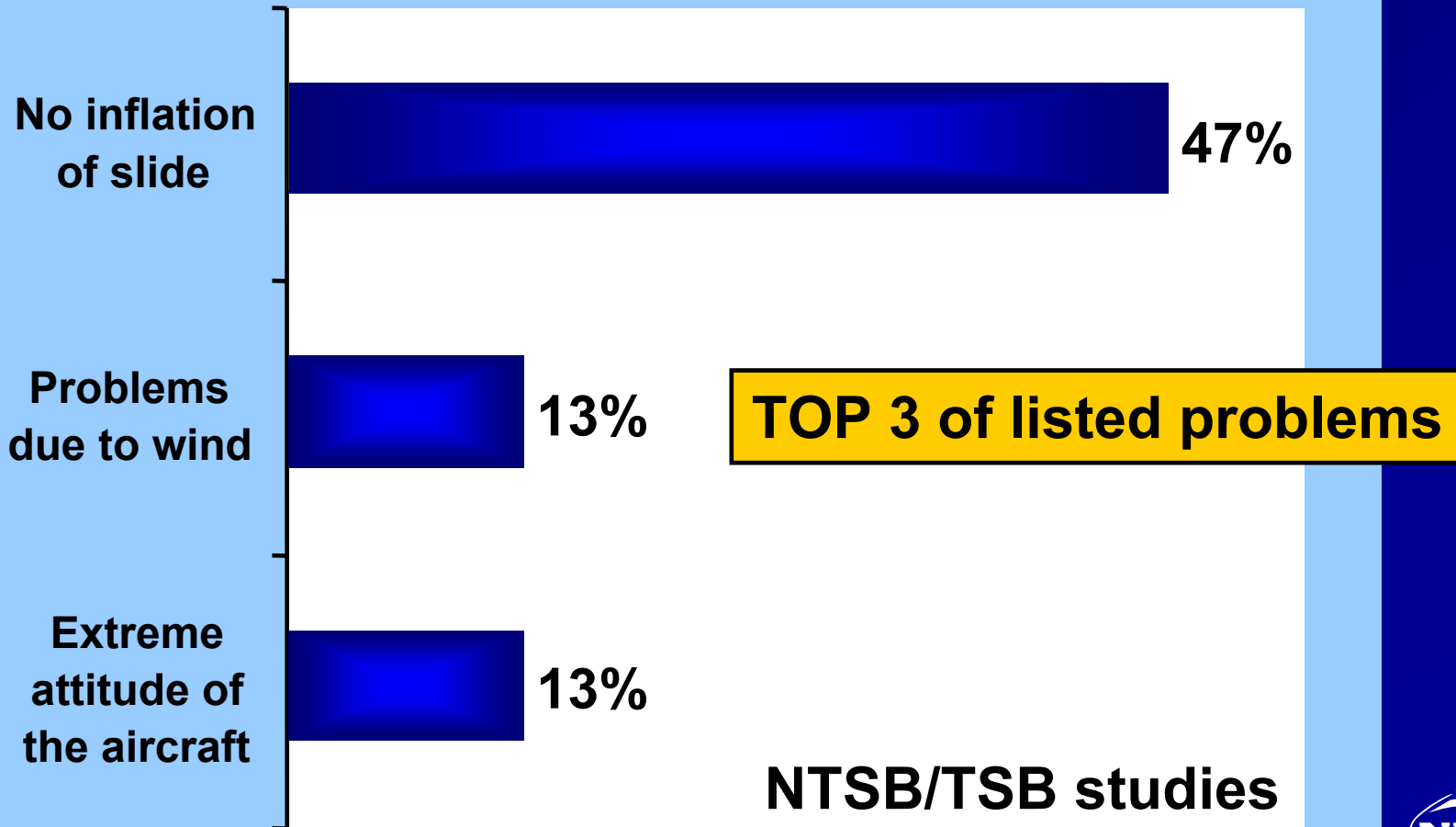
Results



Literature survey



Results: Literature Survey





Results: Literature Survey

- **UK CAA study (1995)**
- **Problems during test deployment:**
 - **Incorrect installation**
 - **Mis-rigging**
 - **Inflation device malfunction**
 - **Fabric torn**
 - **etc**



Results



Analysis of historical evacuations



Occurrence data sources

- **NLR Air Safety Database**
- **Incident reporting systems**
 - UK
 - Canada
 - US





Results: Emergency Evacuations

- Time frame 1970-2003
- Western-built aircraft
- 151 emergency evacuations with slide usage
- 81 evacuations with one or more slide problems



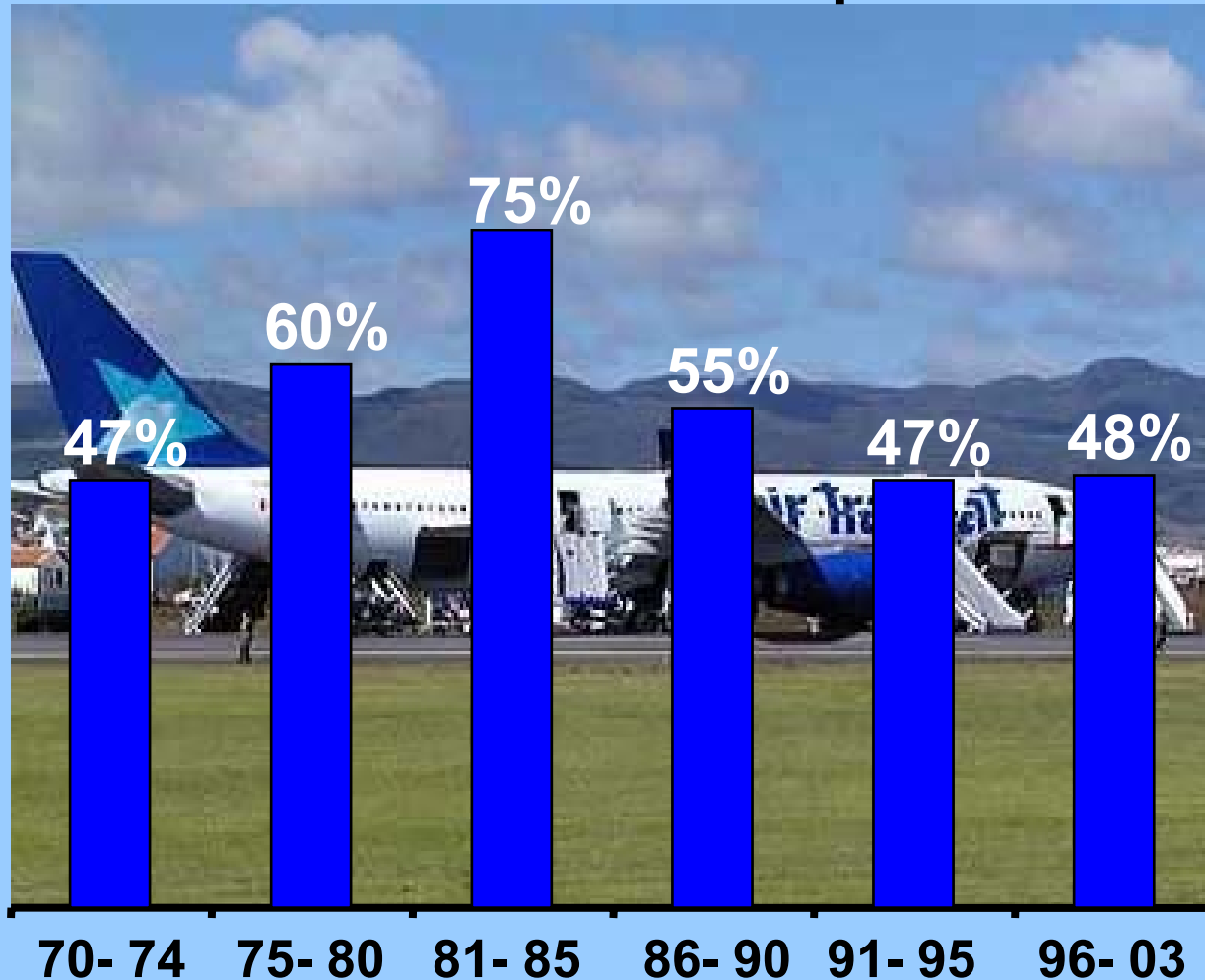
54 % of all occurrences





Results: Emergency Evacuations

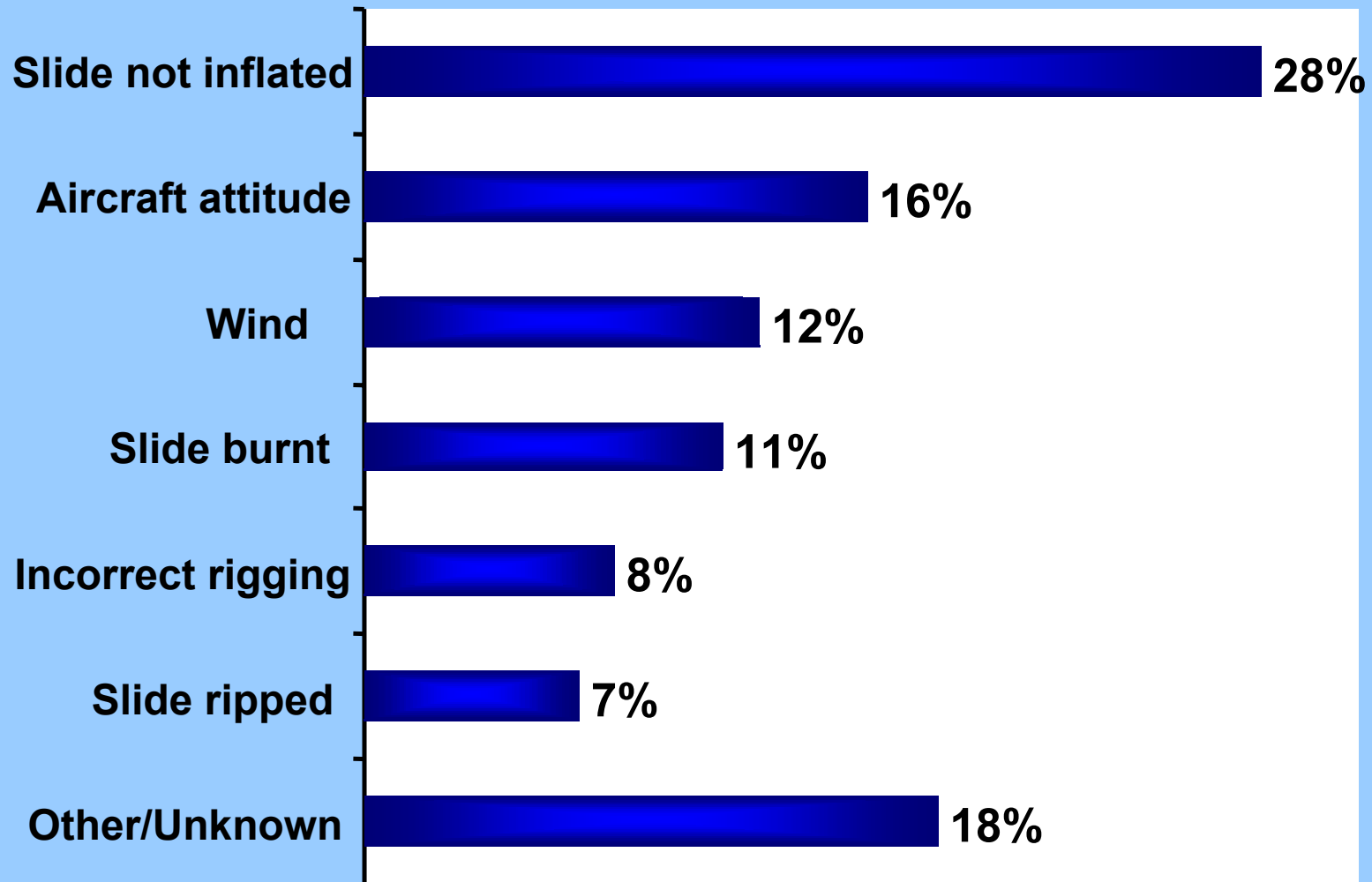
Trend evacuations with slide problems





Results: Emergency Evacuations

Identified problems





Slide inflation problems

- **Different causes:**
 - empty inflation bottles
 - incorrect assembly
 - inflation device malfunctions
 - etc





Aircraft attitude



Gear collapse

Ending in a ditch





Wind

- Wind varied between 6 - 28 knots





Slide burnt





Slide ripped



High heel shoes!





Effect of improper functioning



Fatality rate is 1.7 times higher...
...when slides do not function as
advertised



Results: Precautionary evacuations

- Overall time frame: 1987-2003
- 155 precautionary evacuations
- Data from Canadian, US, UK operators





Results: Precautionary evacuations

- Problems with slides in 6.5% of all cases
- Problems:
 - No inflation
 - Ripped
 - Slide twisted
 - Slide fell off





Conclusions

- Problems with slides in more than half of all emergency evacuations
- Most problems related to **installation** and **maintenance**
- Identified problems are **not new!**



Recommendations

- Disseminate the findings
- Analyse SDRs on slide problems





Finally what is really important?



Further reading



Analysis of Problems Using Aircraft Evacuations Slides
NLR report CR-2004-371

Contact person: Gerard van Es (vanes@nlr.nl)



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